

EXHIBIT E15

IN THE 6TH DISTRICT COURT IN AND FOR LAMAR COUNTY TEXAS

IN RE: LAMAR COUNTY ASBESTOS LITIGATION CASES FILED OR TO BE FILED BY WATERS & KRAUS IN
LAMAR COUNTY, TEXAS

ORDER

Relating to Garlock, Inc. Motion to Suppress Testimony of
Dr. William Longo and Mr. Richard Hatfield
with
Findings of Fact and Conclusions of Law

On June 20, 2001 this matter came on before the court upon a motion filed by Garlock, Inc. to strike Dr. William Longo and Richard Hatfield (Longo-Hatfield) of Materials Analytical Services, Inc. (MAS) from plaintiff's list of expert witnesses. Plaintiffs joined issue and the court on April 23, 2001 issued its Order setting the date for

"... hearing qualifications of William Longo and Richard Hatfield under the *Daubert/Robinson* standards to provide expert testimony involving various products involved in the Lamar County Asbestos Litigation ... all parties affected by the testimony of such witnesses will be bound by the results of the hearings and rulings of the court..."

After announcements of ready the court proceeded with the hearing. The parties waived opening statements, the court received testimony and exhibits from the parties together with final arguments. Plaintiffs tendered the testimony of Dr. Longo for both Dr. Longo and for Mr. Hatfield.

Based upon the testimony, documents and photographs admitted at the hearing and the subsequent review of all the evidence, the court makes the following findings of fact and conclusions of law. Each finding of fact shall also be considered a conclusion of law and each conclusion of law shall also be considered a finding of fact insofar as they are not clearly delineated as one or the other or possibly involve both.

FINDINGS OF FACT AND CONCLUSIONS OF LAW

1. Government and professional association standards perpetuated by the Occupational Safety and Health Administration (OSHA), the United States Environmental Protection Agency (EPA), National Institute of Occupational Health and Safety (NIOSH) and the American Society of Testing Materials (ASTM) for measuring airborne asbestos fibers for human exposures, are minimum standards that do not provide a defense for compliance. Such standards do, however, provide reliable source evidence for the court in understanding generally accepted scientific methodologies and the judicial reliability standards of *Daubert-Robinson*¹ vis-à-vis Rules 401, 402, 403, 702 and 703 of the Texas Rules of Evidence.
2. The tests conducted at Materials Analytical Services, Inc (MAS) by Dr. William Longo and Mr. Richard Hatfield (Longo-Hatfield) on removal, scraping, hand wire brushing and electric wire brushing of gaskets, pouring joint compounds, sawing Kaylo products and mixing and sanding Kelly-Moore joint compounds as reflected in PX Longo 5, 6, 13, 14, 15, 34 and 35, are not scientifically reliable and are not admissible.
3. The MAS tests constitute "junk science."
4. The MAS tests do not meet the requirements of Rules 401 and 402 Texas Rules of Evidence in that the tests are not sufficiently tied to the facts of any individual case in a manner to aid the finder of fact in resolving a factual dispute.
5. The MAS tests fail to account for reasonably foreseeable conditions and pathways of exposure that could be experienced with respect to the removal, scraping, hand wire brushing and electric wire brushing of gaskets, pouring joint compounds, sawing Kaylo products and mixing and sanding Kelly-Moore joint compounds so as to render the MAS tests little more than speculation.
6. If this court has misunderstood the testimony and exhibits admitted during the *Daubert/Robinson* hearing so as to be incorrect in its findings of facts and conclusions of law, the error(s) was caused by the confusing, misleading and prejudicial presentation of the evidence to the finder of fact.
7. A judge does not have to be trained in science to evaluate the reliability of a scientific theory or technique. Although the details of science may be complex, the characteristics of valid scientific knowledge and the kind of reasoning that produce it are not difficult to grasp. Judges are capable of understanding and evaluating scientific reliability.
8. The court makes no finding upon the truth or falsity of the opinions expressed in this case by Dr. Longo individually or on behalf of Mr. Hatfield concerning exposures or pathways of injury.

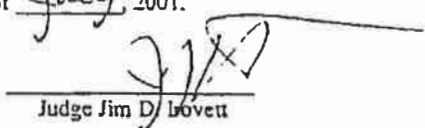
¹ The abbreviation *Daubert/Robinson* is used to indicate the following decisions: *Daubert v. Merrell Dow Pharmaceuticals, Inc.*, 509 U. S. 579 (1993) and *E. I. Du Pont de Nemours v. Robinson*, 923 S. W. 549 (Tex. 1993).

9. These findings of fact and conclusions of law are binding upon all parties affected by the testimony of the witnesses, Longo-Hatfield, concerning the products about which they testified, to wit: scraping and removal of compressed asbestos gaskets by hand and electric wire brushing, pouring joint compounds, sawing Kaylo products and mixing and sanding Kelly-Moore joint compounds.

10. Exhibit A, attached hereto and made a part hereof for all purposes, contains the factual analysis by the court of the relevant exhibits and testimony.

The Motion by Garlock, Inc. to Suppress the testimony of Dr. William Longo and Mr. Richard Hatfield is granted. This order is binding as to Garlock, Inc. and all other defendants in the Lamar County Asbestos Litigation cases filed by Waters & Kraus using the testimony of Longo-Hatfield and tests by MAS against parties who market or produce gaskets (removing, hand wire brushing, electric wire brushing), insulating cement (pouring), Kaylo products (sawing) and Kelly-Moore joint compound (mixing and sanding.)

Entered this 5 day of July, 2001.



Judge Jim D. Lovett

EXHIBIT A

Exhibit A

Fact Analysis Of Relevant Exhibits And Testimony
(Summaries, paraphrases and comments are italicized)

RULE 702 REQUIREMENTS

- (1) The witness must be qualified.
The court is of the opinion that Dr. William Longo and Mr. Richard Harfield are qualified by both education and experience in relevant sciences to be allowed to testify.
- (2) The proposed testimony must be "scientific knowledge."
The court is of the opinion that the tests conducted by Longo-Harfield on the products involved in this hearing are scientifically unproven and not accepted by a respectable community within the relevant sciences.
- (3) The testimony must assist the trier of fact to understand the evidence or to determine a fact in issue.
The court is of the opinion that the Longo-Harfield testimony is neither relevant nor reliable, that it is confusing and that it will not assist the trier of fact.

RELEVANT EXHIBITS

DX Garlock 1, Asbestos and Other Fibers by PCM.

This is the NIOSH Method 7400 from the Manual of Analytical Methods, Fourth Edition, 8/15/94. The MAS tests claimed to have followed this Method.

"APPLICABILITY: ... The method gives an index of airborne fibers. It is primarily used for estimating asbestos concentrations, though PCM does not differentiate between asbestos and other fibers. Use this method in conjunction with electron microscopy (e.g., Method 7402) for assistance in identification of fibers..."

Note that PCM is to be used with this method. TEM is to be used only for "identification" of fibers, not for counting the fibers as was improperly done in the MAS tests. Furthermore, MAS misused Method 7400 instead of Method 7402 for assistance in identification of fibers, rendering the results scientifically unreliable.

"CALIBRATION AND QUALITY CONTROL:

11. Document the laboratory's precision for each counter for replicate fiber counts.
 - a. Maintain as part of the laboratory quality assurance program a set of reference slides to be used on a daily basis... The Quality Assurance Officer should maintain custody of the reference slides and should supply each counter with a minimum of one reference slide per workday. Change the labels on the reference slides periodically so that the counter does not become familiar with the samples."
The MAS laboratory was not certified as required and the reference slides were not handled in conformity to requirements of this Method.
13. Perform blind recounts by the same counter on 10% of filters counter (slides relabeled by a person other than the counter).
*The MAS tests failed to conform to this recount standard as well as the instructions to disregard samples that exceeded the specified limits.
Further, the MAS tests failed to use the calculations, evaluations and reporting methods required by NIOSH Method 7400.*

PX LONGO 25, Garlock Industrial Products Catalog

The Garlock, Inc. catalog provides an abundance of information about the variable specifications, models, types and conditions that should be considered and then eliminated or otherwise accounted for through application of proper scientific methodologies. The MAS tests failed even to consider the following variables.

pg 62 - Gasketing Compound No. 101-S. A non-hardening plastic compound used as a surface leveler on flanged joints and for temporary repair of torn or blown gaskets. Joints on which it is used do not "freeze," and are easy to disassemble at any time. Recommended for use at temperatures ranging from below 0° to ~500° F on pipelines or other equipment handling water, steam, air, oil, gasoline, gas, weak acids or alkalis.

pg 21 - shows eight different "compressed asbestos gaskets" available from Garlock, Inc. in style numbers 900, 7021, 7228, 7705, 8748, 7819, 9057 and 9500. These eight models contain varying characteristics, to wit:

- they are made from two types of asbestos, white chrysotile asbestos and blue crocidolite asbestos;
- tensile strengths vary with the grain from a low of 5,000 p.s.i. to a high of 9,000 p.s.i. and across grain from a low of 2,000 p.s.i. to a high of 4,600 p.s.i.;
- variances in oil resistance after 5 hrs. in: ASTM #3 oil @ 300° F with thickness increases ranging from 3% to 63% and a tensile losses ranging from a low of 10% to a high of 76%;
- fuel resistance, after 5 hrs. in: ASTM Ref. Fuel B @ R.T. Thickness increases as low as 5% and as high as 26%.

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- density variations from as low as .85 oz. to as high as 1.0 oz.
- 16 sheet sizes (inches) ranging from 40 x 40 to 150 x 150
- wide variations in tolerances on thicknesses and specifications;
- style numbers 900, 7021, 7228 and 7705 are branded with Garlock name and style number thru 60". Over 60" std. is unbranded unless otherwise specified

pg 6 - warns that the basic factors surrounding any application (fluid, temperature, pressure, speed and type of motion) added to the age and condition of equipment make concrete recommendations very difficult based only on type of equipment and fluid involved;

pg no. (not shown on the exhibit) - located on the page next to the page entitled "Garlock Materials vs. various media under typical conditions" has the following information in fine print at the top of the page:

"This chart indicates the general suitability of basic materials commonly used in packings and gaskets against various media and is intended only for the general information of the packing user. Obviously the subject of the interaction of packing materials with the several liquids listed is too complex to be covered adequately in a few words. Although chemical considerations are important in the selection of packings, the mechanical properties of the packing itself usually are of greater importance. Packings rarely are fully exposed to the gas or liquid and, therefore, do not necessarily react in the same degree as indicated for the base material. For these reasons packings or gaskets should not be accepted or rejected for any application solely on the basis of chemical consideration."

The catalog lists the following materials: graphite yarn, viton and fluorel, phenolic resins, TFE Fluorocarbon, white asbestos, blue asbestos, cotton, flux, viscose rayon, paper and leather.

pg 28 - Garlock CHEMSEAL jacketed gaskets with 8764 TFE jackets (often called envelopes) are claimed to be ideal for applications where corrosion, contamination or other undesirable effects must be combated. "Good examples" are glass-lined piping and such processing equipment as reactors, kettles, condensers, heat exchangers and columns. PX Longo 5, 6, 34 and 35 MAS Work Practice Studies and videotapes dated April 21, April 25 and June 2000.

The MAS studies listed specific and generally accepted methodologies claimed to have been utilized in the three tests. These include Tyndall lighting, NIOSH Method 7400 and the indirect method of sample preparation by the ASTM D5755-95.

After the hearing the court read and studied the exhibits. It then became clear that the methodologies claimed in the MAS tests were not followed. Further, the tests were deficient in their failure to account for variable but reasonably foreseeable conditions in the possible pathways of exposure. Dr. Longo's testimony was at least disingenuous.

The MAS tests improperly mixed direct and indirect methods of sample preparation, misused and misrepresented TEM analyses and application of Tyndall light. The reports failed to mention that there was no index to convert TEM data to PCM data to enable the use of the index of exposure in the OSHA epidemiological studies. Additionally, Dr. Longo's testimony improperly claimed that the tests covered all pathways of exposure ("one size fits all".)

As to the ASTM Method D 5755-95 claimed in the MAS tests, the following deviations by MAS disprove the reliability of the tests:

- 1) the Method is entitled "Standard Test Method for Microvacuum Sampling and Indirect Analysis of Dust by Transmission Electron Microscopy for Asbestos Structure Number Concentrations"- this method was misused to measure airborne asbestos fibers;
- 2) test results were reported in structures/cc rather than structures/cm³ - this is a misrepresentation of a reportable result.

As to NIOSH Method 7400 claimed in the MAS tests, the following deviations by MAS disprove the reliability of the tests:

- 1) MAS used the indirect sample preparation method instead of the required direct sampling method;
- 2) MAS failed to report as uncountable the fiber counts above 1300 fibers/mm³ as required.

The test reports failed to explain the failure of the MAS tests to utilize the direct transfer NIOSH 7402 Method that states, "This method is used to determine asbestos fibers in the optically visible range and is intended to complement the results obtained by phase contrast microscopy (Method 7400)." The court assumes the reason to be the claim of Dr. Longo that the filters were too heavily loaded with fibers to use the direct method of sample preparation required by NIOSH 7402. Additionally, the provenance of the flanges and gaskets used in the tests were inadequately explained in the test reports. The test reports should have explained these matters but failed to do so.

Furthermore, the MAS tests cannot be duplicated from the information contained in the reports or in Dr. Longo's testimony. There is no established rate of error, insufficient information was furnished on the angle, concentration and lumens of Tyndall light, the videotaping was deceptively out of focus, misrepresents asbestos exposure levels and fails to compare dust generated from non-asbestos gaskets. Further, the June 2000 report involved invalid air samples due to obstructions in the airflow feed-throughs located in the ECL walls and the April 21 and April 25 tests fail to report decontamination of the ECL chamber prior to testing. Indeed, the three results provide suspiciously wide and unexplained variations considering that they were conducted in identical conditions in the ECL.

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Such lapses and unverified variances in the test methodologies cast doubt on the efficacy of the MAS tests and specifically reflect on the violation of standards for the lack of Quality Assurance Certification of the MAS laboratory.

It is apparent that the MAS tests started with the assumption that persons had been exposed to airborne asbestos fibers from work place activities involving Garlock and other brands of gaskets (removing, hand wire brushing, electric wire brushing), insulating cement (pouring), Kaylo products (sawing) and Kelly-Moore joint compound (mixing and sanding) and then selected methods to achieve the desired results stated in the MAS reports and testimony of Longo-Hagfield. This is not permitted.

The limitations of the MAS tests become even more apparent when compared to standards set for and methodologies followed by the Environmental Protection Agency studies currently being conducted in Libby, Montana. PX Longo 8, Phase 2 Sampling and Quality Assurance Project Plan, Revision 0 for Libby, Montana, March 2001.

An open pit vermiculite mine near Libby, Montana is suspected as a source of on-going asbestos exposure to current and future residents in the Libby area. The United States Environmental Protection Agency is engaged in the first known study by non-litigation scientists to utilize a combination of Phase Contrast Light Microscopy (PCM) and Transmission Electron Microscopy (TEM) as an analytical technique for counting airborne asbestos fibers and dust and converting the counts to the OSHA index of exposure that will connect TEM for the first time to the generally accepted epidemiological studies. Up to this time the scientific community has used and recommended TEM as a method of identifying asbestos fibers, not as a method of counting them. No respectable community of scientists has used TEM for counting asbestos fibers.

In Phase 1 of this study EPA gathered samples from multiple indoor and outdoor locations around the community, along with samples of different potential sources of asbestos fibers in air (note by contrast that the MAS samples were from only one site and tested under only one controlled environment).

The EPA results indicate that amphibole-type asbestos fibers are present in a number of environments samples, including indoor air, dust, soil, and insulation. The report notes that the human health risk is mediated by inhalation exposure and utilized stationary air monitors located in the principal living areas of various homes to gather samples. TEM has been used to estimate the concentration of these fibers. The report states at pg. 3, "However, there are issues which exist with regard to both the collection technique and the analytical technique (TEM) (note by contrast that MAS fails to recognize this issue.)

EPA notes that the collection technique may have acceptably measured "passive" activity in homes but may underestimate exposures of the people directly engaged in activities, which do generate dust containing asbestos fibers. The EPA report continues

"Therefore, the first objective of this sampling effort (Phase 2 of the environments characterization project plan) is to measure asbestos levels in the breathing zone of individuals engaged in routine and special activities in and about Libby, and to compare those measurements to data collected from co-located stationary air monitors. This information will be helpful in deciding what type of air sampling method is needed to evaluate risks to individuals engaged in both routine and special activities in the home." (note by contrast that no such considerations were discussed in the MAS tests and all the data comes from only fifteen tests conducted by MAS under only one set of conditions; no comparative tests were conducted in any other location or under any other conditions, although one suspects that the MAS ECL could have been programmed to test a variety of conditions; no satisfactory explanation is offered by MAS or Dr. Longo as to why tests were not conducted under a variety of test conditions.)

"With regard to the analytical technique, the issue is that air samples have historically been analyzed for asbestos using Phase Contrast Light Microscopy (PCM), and the EPA current slope factor for quantifying lung cancer risk from asbestos in air is expressed in units of risk per PCM fiber per cc of air (USEPA 2000a). Thus, even though it is widely recognized that TEM analyses are more accurate and more powerful than PCM analyses, measurements of asbestos concentration based on TEM are difficult to convert to an equivalent concentration by PCM (this is referred to as PCM equivalents, or PCME). Thus the second objective of this sampling effort is to analyze a series of different air samples by both the TEM and PCM methods in order to derive a site-specific relationship between the two, and to help judge which type of measurement is most appropriate." (note by contrast that the MAS tests failed to mention the conversion problem and the lack of a reliable method to measure PCME.)

As noted above, the chief reason for collecting data on asbestos fiber levels in air is to support risk assessment and risk management decision-making. Thus, the third objective of the study is to utilize the data collected to derive preliminary assessments of the potential health risk to people who engage in the types of routine and special activities investigated during the study. Because the study will not span all possible exposure conditions and all exposure locations, the data will be used to help estimate the range of different levels (and hence health risks) that residents of Libby may experience from both routine and special activities." (note by contrast that the MAS tests fail to recognize and test for reasonably foreseeable conditions of exposure;

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further, the MAS tests are not reliable even to estimate range of different levels of airborne asbestos generated while wire brushing a gasket.)

The EPA developed a seven-step plan Data Quality Objectives (DQO) procedure designed to ensure that sampling and analysis plans are carefully thought out and that results of the effort will be adequate to meet basic objectives of the program. The seven-step plan is applied to each of the three main objectives of the project and is as follows:

- Step 1. State the Problem;
- Step 2. Identify the Decision;
- Step 3. Identify Inputs to the Decision;
- Step 4. Define the Study Boundaries;
- Step 5. Develop a Decision Rule;
- Step 6. Specify Limits of Decision Errors;
- Step 7. Optimize the Design for Obtaining Results.

The details of the EPA tests contrast sharply with the generalizations and non-specific plans of the MAS tests.

PX Longo 17, United States Environmental Protection Agency publication EPA 560/S-89-004, "Comparison of Airborne Asbestos Levels Determined by Transmission Electron Microscopy (TEM) Using Direct and Indirect Transfer Techniques.

At page 3, II. Conclusion and Recommendations. "The results from the ... (EPA's seven studies - including one by Dr. Eric John Charfield, whose affidavit is considered below) ..., lead to the following conclusions:

- TEM analysis of air samples using indirect transfer methods tends to provide estimates of total airborne asbestos structure concentration that are higher than those obtained using direct transfer methods. This conclusion is consistent with general opinion and implies that airborne asbestos levels estimated by one method are not directly comparable to those estimated by the other.
- Evidence. A review of available data (seven studies) revealed this relationship in every study despite variations in sampling, analytical, and counting protocols.

There is no single factor that can be applied to convert measurements made using an indirect transfer method to a value that is comparable with measurements made using a direct transfer method. The quantitative relationship between estimates obtained by the two transfer methods is expected to depend on sampling and analytical protocols as well as the nature of the asbestos structures in the air.

PX Longo 32, 41086 Federal Register/ Vol 59, No. 153, Wed., August 10, 1994

This federal regulation states as follows:

"(iv)(A) If a gasket is visibly deteriorated and unlikely to be removed intact, removal shall be undertaken within a glovebag as described in paragraph (g)(5)(ii) of this section. (B) The gasket shall be thoroughly wetted with amended water prior to its removal. (C) The wet gasket shall be immediately placed in a disposal container. (D) Any scraping to remove residue must be performed wet."

This OSHA Federal Regulation provides that "possible" asbestos exposure be avoided but also reasonably implies that moisture in the form of rain, snow, ice, fog, mist and humidity "possibly" affect the manner in which asbestos becomes airborne in the workplace while scraping or brushing a gasket. The MAS tests fail to test or account for such reasonably foreseeable conditions.

DX Garlock 2, OSHA §1910.1001 Asbestos

(a) *Scope and Application.* (1) This section applies to all occupational exposures to asbestos in all industries covered by the Occupational Safety and Health Act, except as provided in paragraph (a)(2) and (3) of this section.

The exception in para (a)(2) refers to construction work and para. 3 to shipbuilding and related activities.

It is the understanding of the court that OSHA does not regulate potential airborne asbestos exposures relating to gaskets since they contain asbestos binding material.

PX Longo 33, letter from Colt Industries relating to handling Garlock products containing asbestos in general and compressed asbestos sheet in particular.

Although not required by OSHA asbestos regulation §1910.1001 to place warning labels on its gaskets, Garlock, Inc. nevertheless did so voluntarily and notified its dealers concerning the possible release of excess amounts of asbestos under extreme conditions. The letter says "The user should, therefore, refer to 29CFR 1910.1001 for information on handling asbestos and monitoring the release of asbestos fibers."

It appears that even though OSHA did not regulate its gaskets, Garlock voluntarily sent this notice of possible release of excessive airborne asbestos under some extreme conditions. This is not a confession of fault by Garlock, Inc. From the evidence offered and admitted in this hearing it appears to be a reasonable, voluntary action by the manufacturer to warn its dealers and end users.

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DX Garlock 3, ASTM D 5755-95, Standard Test Method for Microvacuum Sampling and Indirect Analysis of Dust by Transmission Electron Microscopy for Asbestos Structure Number Concentrations²

5.1 This microvacuum sampling and indirect analysis method is used for the general testing of non-airborne dust samples for asbestos. It is used to assist in the evaluation of dust that may be found on surfaces in buildings such as ceiling tiles, shelving, electrical components, duct work, carpet, etc. This test method provides an index of the concentration of asbestos structures in the dust per unit area analyzed as derived from a quantitative TEM analysis.

5.1.1 This test method does not describe procedures or techniques required to evaluate the safety or habitability of buildings with asbestos-containing materials, or compliance with federal, state, or local regulations or statutes. It is the user's responsibility to make these determinations.

5.1.2 At present, a single direct relationship between asbestos-containing dust and potential human exposure does not exist. Accordingly, the user should consider these data in relationship to other available information in their evaluation.

5.2 This test method used the definition, settleable particulate material, found in Test Method D 1739 as the definition of dust. This definition accepts all particles small enough to pass through a 1 mm (No. 18) screen. Thus, a single, large asbestos containing particle(s) (from the large end of the particle size distribution) dispersed during sample preparation may result in anomalously large asbestos concentration results in the TEM analyses of that sample. It is, therefore, recommended that multiple independent samples are secured from the same area, and a minimum of three samples analyzed by the entire procedure.

The above requirements were violated in the MAS tests as follows:

- 1) *the Method is entitled "Standard Test Method for Microvacuum Sampling and Indirect Analysis of Dust by Transmission Electron Microscopy for Asbestos Structure Number Concentrations"- this method was misused to measure airborne asbestos fibers;*
- 2) *the test results were reported in structures/cc rather than structures/cm³ - this is a misrepresentation of a reportable result;*
- 3) *the tests attempt to provide results in a single direct relationship between asbestos-containing dust and potential human exposure, which does not exist;*
- 4) *the tests ignored the warning that sample preparation may result in anomalously large asbestos concentration results in the TEM analyses of that sample.*

PX Longo 19, Exposure to Airborne Asbestos Associated with Simulated Cable Installation Above a Suspended Ceiling, November 1991 American Industrial Hygiene Association Journal.

PX Longo 22, Asbestos Exposure During and Following Cable Installation in the Vicinity of Fireproofing, March/April 1993 American Industrial Hygiene Association Journal.

These companion studies were sponsored in part by the Plaintiff's Executive Committee of the National Schools' Class Action for Cost Recovery. The eight co-authors included three of the witnesses in this court: Dr. William Longo (and through him, Richard Hatfield) of Materials Analytical Service, Inc. (address in Norcross, Ga.) and Dr. James R. Millette of McCrone Environmental Services, Inc. (address in Norcross, Ga.) and Millette, Vander Wood and Associates, Inc. (address in Norcross, Ga.). Also see P.X Longo 20, immediately below, that appears to be closely related to P.X i9 and 22.

The studies properly sounded a warning that workers should wear respirators while performing these work place activities because of the "possibility" of improper exposure to airborne asbestos fibers.

In both these articles, however, it is clearly recognized and acknowledged that their purpose was not to compare exposure levels to current or previous OSHA PEL, adding that "...Further research is still necessary to standardize dust and air sampling techniques, including the number of samples necessary to characterize a given surface area, recovery efficiency from various surfaces and the analytical technique employed when heavy concentrations of asbestos and other particles are encountered."

Some of the testimony of plaintiffs' witnesses Longo (and through him, Hatfield) and Millette is either at a variance with their opinions expressed in these two articles or involved faulty memories and otherwise evasive answers. Furthermore, plaintiffs failed to cite the court to correctly performed scientific studies or properly peer reviewed scientific publications to justify any changes of their opinions as expressed in P.X Longo 19 and 22. These articles, while peer reviewed, fail to fulfill plaintiffs' burden to cite peer reviewed published articles in support of their current scientific positions.

² "This test method is under the jurisdiction of ASTM Committee D-22 on Sampling and Analysis of Atmospheres and is the direct responsibility of Subcommittee D22.07 on Sampling and Analysis of Asbestos."

Dr. Eric John Chaffield, whose affidavit is considered below, claims he is a member of the D-22 committee and was honored by it in 1997 "... in recognition of outstanding contributions in development of ASTM and International Standard analytical methods for determination of asbestos." Dr. Chaffield further claims that all his analytical standards development activities were, and continue to be, voluntary

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In any event these studies would have very limited use when attempting to apply them to the varied indoor, outdoor, internal and external conditions experienced in the work place while scraping and brushing gaskets, pouring joint compound, sawing Kaylo products and mixing and sanding Kelly-Moore joint compounds.

PX Longo 20, Baseline Studies of Asbestos Exposure During Operations and Maintenance Activities, November 1994 Appl. Occup. Environ. Hyg. 9(11)

This study appears to be closely related to the studies shown in PX Longo 19 and 22, immediately above. Its co-authors include the same three plaintiffs' witness but only two of the other authors, having lost three co-authors without explanation. Further, this study was not sponsored by the Plaintiffs' Committee of the National Schools' Class Action for Cost Recovery. New sponsors included Dies, Dies and Henderson (Orange, Texas) and the West Virginia State Attorney General's Office (Charleston, W.V.)

The purpose of the study was to provide evidence of "possible" exposures to dangerous levels of airborne asbestos while performing certain maintenance duties in the work place. This study was designed to provide information to the authors so they could design an O&M (Operations & Maintenance) program "... based upon our extensive experience (estimated at 30 man-years) in designing, implementing, and evaluating O&M programs for buildings with ACM."

It was not the purpose of this study to provide information that could be converted to the OSHA index of exposure. It instead states, "Statistical analyses were applied to the logarithm (base 10) of the measured concentrations. The log transformation tends to equalize variances and permit the use of standard statistical tests that would otherwise be inappropriate. Previous studies of air pollution data have demonstrated that air pollution data tend to be lognormally distributed."

No other evidence of "lognormal distribution" was submitted to the court, or if it was, is not recalled and not located in the exhibits at this point. Although not specifically mentioned in the Libby, Montana study by EPA being currently conducted (PX Longo 8, see above), the first objective of the EPA Libby study indicates that there is no method of conversion from the TEM-direct analysis methods used in these studies to the PCM index of asbestos exposures. The court assumes that if the lognormal distribution is correctly understood by the court to be the conversion method used in this study (PX Longo 20), that the plaintiffs would have submitted appropriate supporting material. Absent such material the court finds the plaintiffs have failed to discharge their burden of proof and rejects this as a substantiating study in satisfaction Daubert/Robinson standards.

In any event this study (PX Longo 20) would have very limited use when attempting to apply it to the varied indoor, outdoor, internal and external conditions experienced in the work place while scraping and brushing gaskets, pouring joint compound, sawing Kaylo products and mixing and sanding Kelly-Moore joint compounds.

DX Garlock 4, ASTM D 6281 - 98, Standard Test Method for Airborne Asbestos Concentration in Ambient and Indoor Atmospheres as Determined by Transmission Electron Microscopy Direct Transfer (TEM)

1.1 This test method¹ is an analytical procedure using transmission electron microscopy (TEM) for the determination of the concentration of asbestos structures in ambient atmospheres and includes measurement of the dimension of structures and of the asbestos fiber found in the structures from which aspect ratios are calculated.

1.2 This test method is suitable for determination of asbestos in both ambient (outdoor) and building atmospheres.

1.4 The direct analytical method cannot be used if the general particulate matter loading of the sample collection filter as analyzed exceeds approximately 10% coverage of the collection filter by particulate matter.

ASTM 6281-98 is not mentioned in the MAS reports. It appears it was not utilized because of the 10% coverage limitation but, if so, this should have been mentioned in the MAS reports so as to explain its methodologies.

Other Exhibits Not Specifically Reviewed

Exhibits not reviewed above by the court are deemed either not to relate to the Daubert/Robinson issues of reliability or relevancy or are considered to be unnecessarily duplicative of other cited exhibits.

RELEVANT TESTIMONY AND AFFIDAVITS

William Boelter, transcript of testimony, June 20, 2001.

William Boelter is an environmental engineer, a certified industrial hygienist/consultant, 1973 graduate of Purdue University with B.S. degree and a former OSHA compliance officer in Milwaukee and Chicago from 1976 through 1980 supporting various regional offices as well as the national office. He was called to testify for the defendant, to wit:

¹ "This test method was adapted from International Standard ISO 10312 "Air quality - Determination of asbestos fibres - Direct transfer transmission electron microscopy method."

Note that Dr. Eric John Chaffield, whose affidavit is set forth below, is the author of ISO 10312. He is also author of ISO 13794 which is a corresponding indirect-transfer analytical method, both of which were affirmed by international ballot and published as international Standards.

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226/14:

"... I wasn't really sure what (*light*) he (*Dr. Longo*) used (*in the tests*). There was not really a specific reference made to the type of light and consequently I selected based on what I saw in the video a similar looking theater light and a wattage that I believe was what was being used. But I wasn't really sure what was used."

228/21:

"... Tyndall lighting is not used in the industrial hygiene community. It may have been attempted at various times for various occupations but it is not widely used — I don't know anybody that uses it with the exception of Doctor Longo."

231/3:

"... The EPA historical data is mass based; whereas OSHA's historical data and the epidemiology is based on fiber sizes and inhalation. The EPA data mass base has no relationship to epidemiological data. It is an air quality issue independent of epidemiology."

231/9:

"Q. (by the Court) Let me ask you, would you think it would be safe to work without respirators or special clothing in the atmosphere and in what you saw in the videotape Doctor Longo ran? (*PX Longo 34 and 35*)

A. Yes. As a matter of fact, I do my tests without respiratory protection.

Q. (by the Court) So you would go into that environment as shown in Dr. Longo's videotape without special breathing equipment?

A. Yes sir."

235/10:

Q. You're not an electron microscopist like Doctor Longo, is that correct?

A. I thought he described himself as a material scientist.

Q. And who has more expertise in electron microscopy, you or Dr. Longo?

A. That may be a draw.

Q. Do you work an electron microscope?

A. I used to own a laboratory that we had an electron microscope. We were NAVLAC certified, as well as AIHA.

Q. Did you prepare the samples?

A. I prepared some, yes.

236/8:

Q. You know that some of those PCM levels (*in the MAS tests*) are as high as 20 fibers per cc. Is that correct?

A. I don't believe the numbers"

238/3:

Q. ... If you're in an environment where an activity is producing one fiber per cc, you're supposed to protect yourself. Is that correct?

A. That's not what an excursion limit is.

Q. Why don't you tell us what it is.

A. An excursion limit is where an infrequent activity which cannot be valued on a time-weighted average basis is conducted where the concentration would exceed one fiber per cc on a 30-minute sample.

Q. Fair enough. And those levels reported in the study by MAS would exceed the excursion limit. Correct?

A. They weren't excursion samples. That's not — what I'm trying to explain is industrial hygiene. The samples were not collected in the way to compare against the excursion limit. It wasn't an excursion activity and therefore to compare them against an excursion limit would be improper.

240/25:

Q. So you think Doctor Longo just lied when he got up here and said he opened the flange and that was the way the gasket was?

A. I have known Dr. Longo a long time and I am simply saying that I do not know what the conditions were of those gaskets. But I have been in the industrial environment for a very long time and I have never seen the conditions that are demonstrated in that video.

Q. Are you suggesting to the court that Dr. Longo somewhat doctored those flanges and throws gaskets before performing those tests, that he lied to the court?

A. I did my own tests involving 80 fittings and I have never encountered a gasket of that type.

242/11:

"I have a long history of being around pipe, plumbers, pipe fitters. My father was a plumbing contractor and I have been around the piping trades for my entire life and I have done considerable work in industrial environments, which include pipe fitters."

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243/19:

"The results I had in a study (such as the MAS studies) which involved ten different types of removals and replacements of gaskets and packing, the highest concentration that I received on an eight hour time-weighted average was .06. Most of the results were in the .02 to .04 ranges."

250/2:

Q. And OSHA has never passed a standard (relating to airborne asbestos) with respect to the industry standards? (as opposed to construction standards relating to airborne asbestos)

A. That's correct.

The court finds that William Boelter is qualified as an expert in a relevant science to render the opinions expressed in his testimony set forth above, that such testimony is properly corroborated and is both relevant and reliable in accordance with Daubert/Robinson standards.

Eric John Chatfield, PhD, affidavit dated January 6, 2001.

Dr. Chatfield is a Canadian citizen and a world-class scientist with M.A. in Natural Sciences and Ph.D. in Colloid Science from Cambridge University. He has more than 25 years experience in identification and analysis of asbestos fibers and their behavior in air and water through both optical and electron microscopy. He has written and published more than 60 peer-reviewed scientific articles relating to asbestos analysis, has been actively involved in the creation of recognized standards and honored by being chosen as the chairman of various prestigious organizations related to asbestos science.

Dr. Chatfield's credibility is an issue since he has testified extensively and exclusively for defendants in asbestos cases. His affidavit states

pg. 3, para. 11:

"Other than to determine whether fibers found in the air are asbestos fibers, TEM is not generally used to measure occupational exposure to asbestos."

"World-wide, occupational exposure to airborne asbestos is measured by phase contrast optical microscopy (PCM)... To my knowledge, no country has used, or is proposing to use, transmission electron microscopy (TEM) for routine monitoring of occupational exposure to airborne asbestos..."

"... the (PCM) measurement represents an index of exposure to asbestos. This index is directly relatable to past measurements which are associated with the epidemiology."

pg. 4, para. 11:

"In the studies made by Mr. Hatfield and Dr. Longo, NIOSH Method 7402 (as opposed to NIOSH Method 7400) should have been used for the analysis of the air samples. This would have yielded data directly comparable with the epidemiological database. Instead, they elected to use an indirect-transfer TEM specimen preparation, and thereby generate data of no value because there are no scientific standards against which these data can be compared."

pg. 4, para. 12:

"The method chosen by Mr. Hatfield and Dr. Longo to analyze the air filters from their studies is stated as ASTM Method D 5755-95... (this method) does not include application to the analysis of air samples, and it is an improper use of the ASTM standards, given that airborne particulate rather than surface dust was being analyzed. The results of ASTM D 5755-95 are specified to be reported in structures/cm⁴, not structures/cc as used in the studies by Mr. Hatfield and Dr. Longo."

"Indirect-transfer TEM specimen preparation of airborne asbestos or asbestos-containing surface dust (as done by Longo-Hatfield in the MAS tests) causes large changes to occur in the fiber size distributions, particularly in the case of chrysotile, and the measure fiber size distribution derived from such a preparation bears little resemblance to that which existed in the original sample..."

pg. 5, para. 12:

"The indirect-transfer TEM measurements made by Mr. Hatfield and Dr. Longo therefore do not provide reliable information about the actual exposures during their experiments."

pg. 6, para. 14:

"Moreover, if the width distributions of the asbestos structures reported in Mr. Hatfield and Dr. Longo's indirect dust measurements were really those that existed in the original airborne material, the results reported would contradict conventional physics."

pg. 7, para. 16:

"Comparison of indirect-transfer and direct-transfer TEM specimen preparations of air samples collected from airborne particulate derived by abrasion of asbestos-containing materials shows that the majority of the asbestos structures reported by the indirect-transfer method (improperly used in the MAS studies by Longo-Hatfield) did not exist as separate entities in the original airborne particulate material (Chatfield, 2000).

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pg. 7, para. 17

"(Tyndall illumination used in the video recordings by Longo-Hatfield in the MAS studies -PX Longo 34, 35)... are misleading for the following reasons: (a) ... the Tyndall effect does not discriminate between asbestos fibers and other types of particle. The contribution of asbestos to the dust depicted in the video recordings, and whether the particles are respirable or non-respirable, are therefore unknown; (b) "... de-focusing creates an extended illumination source from each point source, giving the overall effect of a snow storm. This type of demonstration grossly mis-represents the actual amount and size of the dust particles, and it is therefore misleading."

Dr. Chatfield's opinions are corroborated by details and annotations to independent, peer reviewed and generally accepted scientific publications and standards that provide a level of confidence for the court in his credibility. Furthermore, his opinions are fortified by similarly corroborated opinions by other experts who are deemed credible by this court. The court finds that Dr. Chatfield is qualified in a relevant science to render the opinions quoted above and that such opinions are both relevant and reliable in accordance with Daubert/Robinson standards.

John W. Spencer affidavit dated June 6, 2000 (attached as Exhibit A to Garlock's Motion to Strike William Longo and Richard Hatfield as Plaintiffs' Experts

Mr. Spencer is a certified industrial hygienist whose affidavit states that his CV is attached. The CV was not included with the copy furnished to the court, so the only knowledge of the court on the requirements of being a certified industrial hygienist is contained in the testimony of Mr. Frederick William Boelter, another certified industrial hygienist who testified live before the court. At page 220 line 7 of the court transcript of Boelter's testimony is the following:

- Q. What are the requirements to become a certified industrial hygienist?
- A. You have to have a degree in the sciences, as well as five years of experience doing industrial hygiene work, and then sit for a two-part examination.
- Q. And you completed all that in 1980?
- A. Yes.
- Q. Does the examination for certified industrial hygienist — does the industrial hygienist exam require that you demonstrate mastery on the collection of analysis of air samples for occupational exposure?
- A. Yes.
- Q. In particular, occupational exposure to asbestos?
- A. Not necessarily in particular. It is a very broad test because it's a comprehensive certification. It encompasses sampling and analytical procedures broadly for the industrial hygiene field.

For the purpose of these findings and conclusions the court assumes that Mr. Spencer fulfilled these same requirements.

The following is a summary and paraphrased version of the Spencer affidavit.

1. *The tests conducted at Materials Analytical Services, Inc (MAS) by Dr. William Longo and Mr. Richard Hatfield on gasket removal, scraping, hand wire brushing and electric wire brushing, as reflected in PX Longo 5, 6, 34 and 35 in April and June 2000, failed to use standard or generally recognized test procedures or any combination of such procedures that are recognized by any substantial number of the relevant scientific community or that have been peer reviewed and published.*
2. *The Spencer opinions are annotated with a wealth of materials that are generally recognized within the relevant scientific community and by peer-reviewed articles that have been published in recognized and generally accepted scientific journals.*
3. *In Spencer's opinion the tests conducted at Materials Analytical Services, Inc (MAS) by Dr. William Longo and Mr. Richard Hatfield on gasket removal, scraping, hand wire brushing and electric wire brushing, as reflected in PX Longo 5, 6, 34 and 35 in April and June 2000, failed to follow the requirements of the NIOSH 7400 and ASTM D5755-95 tests that are cited for support in the MAS reports. Specifically the MAS tests mixed the direct and indirect methods of sample preparation required by each test. The methods used in the MAS tests are not generally recognized within the relevant scientific community, are not recognized within a respectable portion of the relevant scientific community and are not recognized by peer reviewed articles that have been published in recognized and generally accepted scientific journals.*
4. *The methods used in the MAS tests are demonstrably incorrect.*
5. *All laboratories that determine fiber-in-air concentrations are required to have stringent quality control programs to monitor the proficiency of the laboratory against the methods criteria.*
6. *Although TEM is used in connection with NIOSH 7402, it is only for the purpose of identifying asbestos fibers above 5 microns in length, 0.25 microns in width and less than 3:1 length to width aspect ratio, not for counting asbestos fibers as was improperly done in the MAS tests.*
7. *The use of Tyndall lighting in the MAS tests is not an acceptable industrial hygiene practice and is not relevant or reliable for the quantification of airborne asbestos fibers.*

The above cited facts and opinions contained in the Spencer affidavit are detailed, cite a wealth of easily verifiable and generally accepted standards and peer-reviewed publications. These along with the testimony of other

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experts deemed competent by the court corroborate Spencer's opinions. Mr. Spencer is found to be qualified in a relevant science to testify to the opinions shown above and that those opinions are both relevant and reliable under Daubert/Robinson standards.

Dr. William Longo testimony at Daubert/Robinson hearing on June 20, 2001.

Dr. Longo presented at the hearing with testimonial charisma and convincing demeanor. His educational qualifications and experience were impressive. He claims to have conducted business and testified fairly for both plaintiffs and defendants. Dr. Longo's testimony sounded reasonable and this court accepted it at face value until completing study of all the exhibits, affidavits and testimony.

After considerable study by the court, it became clear that the methodologies claimed to be used by MAS in the test reports were not followed. Further, no respectable community of scientists in the relevant professions recognizes the methods used by MAS. And although Dr. Longo claimed that the tests covered the pathways of exposure ("one size fits all") for gaskets (removing, hand wire brushing, electric wire brushing), insulating cement (pouring), Kaylo products (sawing) and Kelly-Moore joint compound (mixing and sanding), the MAS tests were also deficient in their failure to account for variable but reasonably foreseeable conditions in the possible pathways of exposure.

Neither the MAS tests nor Dr. Longo offer a satisfactory explanation as to why tests were not conducted under a foreseeable variety of test conditions.

Re-reading Dr. Longo's testimony reveals it to be practiced and to employ misdirection and evasiveness. It is at best disingenuous, not credible and unsupported by any respectable community of scientists.

James R. Millette, Ph.D., deposition dated June 7, 2001; affidavit dated May 22, 2001.

Dr. Millette is an educator and scientist who describes himself as an Environmental Scientist. He has worked and written extensively about asbestos. He gave his videotaped deposition in this case for the plaintiffs on June 7, 2001. He claims that he has testified in the past for other plaintiffs but not for any defendants. His affidavit consists of less than one and one-half pages of opinions with sixteen pages of attached CV.

Dr. Millette opines that the use of Tyndall lighting is not misleading and that the MAS tests describe results by both PCM and TEM. He then cites to one of his co-authored articles concerning levels of asbestos fiber release from gaskets "depending on the type of activity to which the gaskets are subjected." He further opines that the results of the MAS tests "...are not very different from the values reported in the scientific literature." He further describes the MAS test results as "... useful in understanding the release of asbestos fibers from gasket material." He concludes that "... TEM asbestos values are not new or novel and are generally accepted by the scientific community."

The court is disturbed by the lack of proper scientific corroboration, explanations and annotations in support of Dr. Millette's opinions. He fails to reconcile the mixing of procedures under NIOSH 7400 and ASTM D-5557-95 and does not cite any respectable scientific sources in support of such novel procedures. The entire body of work of OSHA, EPA, NIOSH and ASTM are ignored. Neither does he cite any more authority than his anecdotal experience on the use of Tyndall light.

Indeed, the court assumes that if there was proper scientific support shown for the novel procedures utilized by MAS that the plaintiffs would have submitted a copy of the corroboration cited by Dr. Millette to his own article in the EIA technical journal 3(2): 10-15, 1993) relating to air sampling results for gasket activities. The court presumes that Dr. Millette's article was not offered into evidence because it would not have been supportive of plaintiffs' position.

Dr. Millette also presented in his videotaped deposition with testimonial charisma much in the same fashion as Dr. Longo. In the early part of his testimony Dr. Millette could not remember enough about the MAS test details to be credible. Later, when confronted by cross-examination concerning the details of NIOSH 7400, ASTM D 5755-95 and Tyndall lighting, his answers were consistently evasive and disingenuous at best, not unlike the performance of Dr. Longo during the hearing.

In Robinson at page 559 the supporting testimony of plaintiff's expert, Dr. Warde that there was a "... 99% probability that Dr. Whitcomb's conclusion ... was correct" was considered and rejected by the court.

The court likewise rejects the testimony of Dr. Millette as being insufficiently corroborated by peer reviewed publications and lacking in corroboration with any respectable community of scientists who accept the methodologies of the MAS tests. When combined with his faulty memory and evasive answers, his opinions are not credible.